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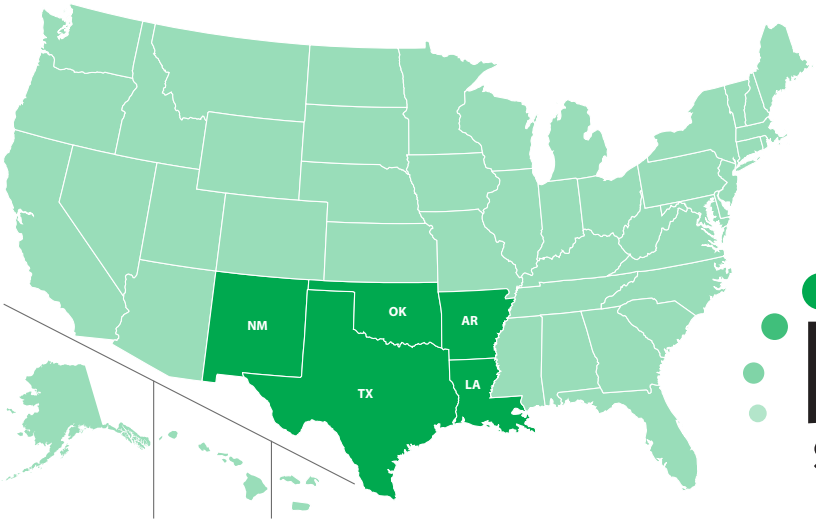

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This report is available on the regional educational laboratory web site at http://ies.ed.gov/ncee/edlabs.

Summary

Aligning science assessment standards: Texas and the 2009 National Assessment of Educational Progress (NAEP)

This policy research document is intended for policymakers to use when examining possible changes to the state assessment's alignment with the National Assessment of Educational Progress (NAEP). The 2009 NAEP test is not yet in existence, so the purpose of this report is to give policymakers a headstart in determining where they might, if they so decide, begin to make changes in their assessment standards and specifications to develop an assessment system more closely aligned to that used for the NAEP.

The alignment at each grade varied considerably. When NAEP grade 4 standards are compared with the Texas grade 5 standards in the Texas Assessment of Knowledge and Skills (TAKS) information booklet, most NAEP content items are addressed at least partially. But for grades 8 and 12 significant NAEP content areas are unaddressed by the TAKS standards. For grade 8 nearly half the NAEP content statements are unaddressed. For grade 12, TAKS includes only biology, chemistry, and integrated physics, so none of the NAEP's grade 12 Earth and space science content statements are addressed.

This report reveals current alignment issues between the state's tests and the future NAEP tests and may be especially important to those considering revising their science standards and assessments in line with No Child Left Behind requirements for state science tests in elementary, middle, and high schools. If state policymakers wish to increase the alignment between the state assessments and the NAEP, areas to consider are adding Earth and space science to the high school examination and including a wider variety of test item types beyond multiple-choice. Revising assessments requires considerable time and resources, so policymakers must carefully consider their capacity for making changes and the degree to which such changes will benefit students.

Grade 4 alignment

Most grade 4 NAEP content statements are, to some degree, addressed by Texas content statements, but the Texas statements typically are only partially aligned to the NAEP statements. TAKS also contains several content items not listed in NAEP content statements. Most of the NAEP content is implied in the Texas content, not explicit. In a few cases Texas addresses a topic at a higher grade and in more detail than the NAEP does. The overall alignment rating is 2, which indicates partial alignment. (A rating of 1 indicates no alignment, a rating of 3 full alignment.)

Grade 8 alignment

Almost half the NAEP grade 8 content statements are unaddressed by the grade 8 Texas statements. Most other Texas content statements are only partially aligned to the NAEP. But Texas also contains many content items not listed in NAEP's content statements. Most of the partially aligned NAEP statements contain more content or more detail than the corresponding Texas statements, and Texas often contains statements that imply content explicitly stated by the NAEP. The overall alignment rating is 1.6, between nonalignment and partial alignment.

Grade 12 alignment

No Earth and space science content statements in the NAEP are addressed by Texas because TAKS includes only biology, chemistry, and integrated physics. So the overall alignment between NAEP grade 12 and Texas high school TAKS tests is fairly low. But in the NAEP's physical and life science sections, Texas is most often partially aligned: Many NAEP content statements contain more content and are more detailed than Texas' corresponding content statements. In addition, Texas content statements often imply content explicitly stated by the NAEP. The overall alignment rating between only the physical and life science sections of the NAEP and Texas content statements is 1.8. The overall alignment rating including Earth and space science statements—all with ratings of 1—is 1.6.

Test specifications

Test specifications alignment reveals that the Texas assessment relies exclusively on multiple-choice items, unlike the NAEP, which also includes short and extended constructed-response items, item clusters, and predict-observe-explain items, as well as testing a subsample of students with hands-on tasks or interactive computer tasks.

Differences in testing time devoted to the NAEP science topics reflect the fact that Texas tests nature of science as a separate content strand, while the NAEP addresses science practices in conjunction with content topics. And because Earth and space science is not tested in grades 10 and 11 in Texas, the balance of testing time at grade 12 is considerably different.

Since the purpose of this report is to allow policymakers the opportunity to examine their alignment with the NAEP before the test is implemented, no further research is suggested at this time.

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